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A NEW FOSSIL GLEICHENIACEOUS FERN FROM ILLINOIS

BY

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THE ONLY KNOWN GENUS of Paleozoic ferns attributable to the family Gleicheniaceae is *Oligocarpia* Goeppert. The sorus is of the gleicheniaceous type although the complete details of its anatomy are insufficiently known. The genus has been the subject of considerable study because of its great antiquity and significant relationship. *Oligocarpia* is probably exclusively Paleozoic in age but several authors have included Mesozoic species in the genus.

The living Gleicheniaceae include two genera and eighty species. *Gleichenia* has seventy-nine species which are chiefly distributed in tropical regions, and *Stromatopteris*, endemic to New Caledonia, is monotypic. No species of the family occur in the existing north temperate flora.

Sometimes a third genus, *Platyzoma*, is recognized. This genus contains only one species occurring in northern Australia.

The oldest undoubted Gleicheniaceae occur in the Triassic of Switzerland, and soon thereafter the group became widely distributed over the world. It seems probable that the family attained its maximum development during Cretaceous times, and that it has gradually declined since the beginning of the Cenozoic.

Oligocarpia antedates the Triassic and thus is older than any of the typical members of the family. It has been observed that the fructification of *Oligocarpia,* though distinct, bears close resemblance to those fructifications characteristic of the Gleicheniaceae.

Six species of *Oligocarpia* have been reported from Carboniferous rocks of North America: *O. gutbieri* Goeppert, *O. alabamensis* Lesquereux, *O. flagellaris* Lesquereux, *O. missouriensis* D. White, *O. kansasensis* Sellards, and *O. brongniarti* Stur.

In a collection of fossil plants from the Mazon Creek beds recently sent to the Botanical Museum of Harvard University by Mr. F. O. Thompson of Des Moines, Iowa, there are excellent fruiting examples of a typical *Oligocarpia* which cannot be referred to any of the described species. It is noteworthy that Lesquereux labelled similar sterile specimens and one poorly preserved fertile specimen as "*Pecopteris sp. nov.*" I propose to name this species *Oligocarpia vera.*

This new species is especially interesting because each sporangium possesses a uniseriate annulus. Serial transverse sections were made through 20 sori by the nitrocellulose peel method. It was possible to take from 8 to 14 peels per sorus. The etching solution necessary to dissolve the mineral matrix away from the "carbonized" sorus was 5% hydrochloric acid.

OLIGOCARPIA *Goeppert* 1841 Gattungen der Fossile Pflanzen Lief. i, ii; p. 3.

Genotype: *Oligocarpia gutbieri* Goeppert pl. 4. f. 1,2.

Original generic description: "Frons bipinnata, pinnulis aequalibus. Nervi primarii flexuosi apicem versus in dichotomias soluti, nervi secondarii simplices dichotomive, inferiores simplices ante marginem evanescentes apice sorigeri, superiores dichotomi excurrentes. Sori e

4–5 sporangiis rotundis multiarticulatis compositi."

Original specific description: "Ol. fronde bipinnata, rhachi tenui, pinnis multiiugis, pinnulis ovatis lata basi sessilibus alternis apice rotundatis crenulato-dentatis approximatis, nervo primario flexuoso sub apice pluries dichotomo, nervis secundariis simplicibus dichotomisve."

The present usage of *Oligocarpia* is that of Kidston[1] whose definition is based chiefly upon *Oligocarpia gutbieri.*

Kidston describes *Oligocarpia* as follows: "Synangia circular, formed of 3 to 5 (rarely 6) pyriform sporangia with a prominent annulus composed of two rows of cells, which passes over the apex of the sporangia and bends down the sides of their free portion. A band of small narrow cells forming a stomium passes down the ventral surface of the sporangia and indicates the part at which the sporangia opened for the dehiscence of the spores. Spores tetrahedrally developed, smooth, with a triradiate ridge on their surface. The synangia are placed singly on the lateral veinlets, and frequently occupy almost the whole of the limb between the midvein and the margin of the somewhat reduced pinnule, or are situated somewhat more to the margin. The veinlet on which the synangia are placed does not extend beyond them."

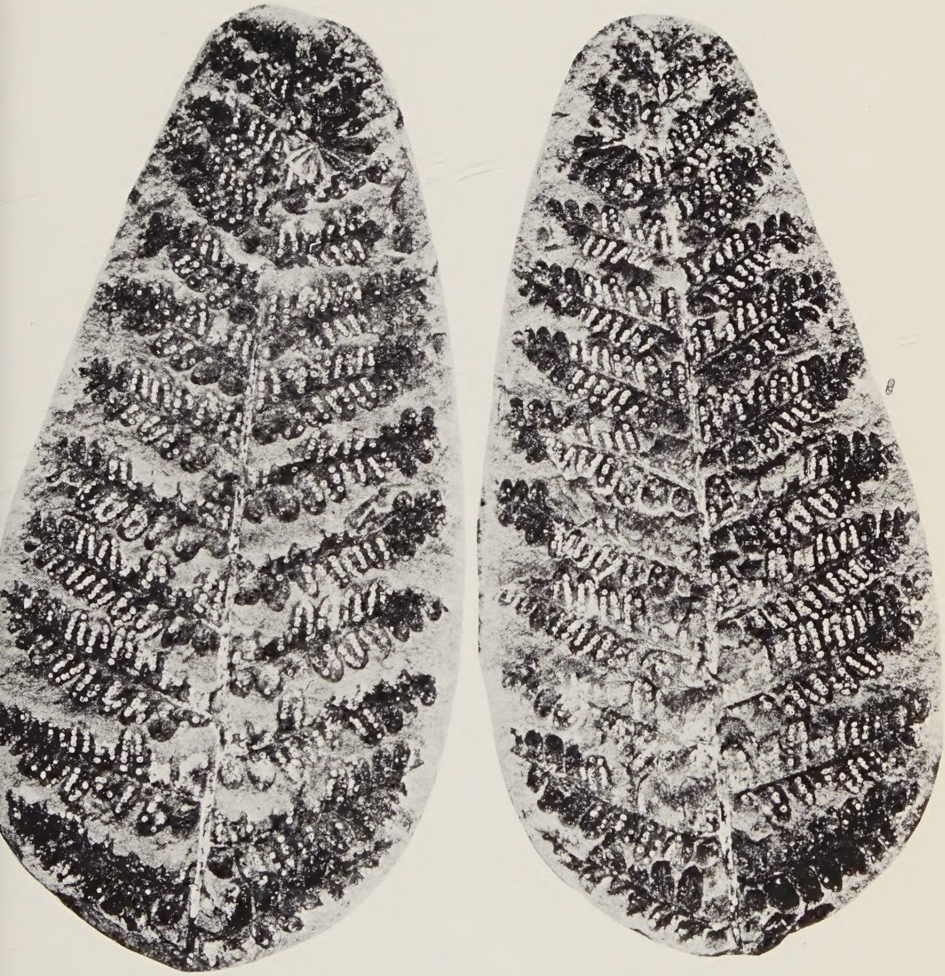
It will be observed that this diagnosis is in part unsatisfactory.

Oligocarpia vera *Darrah sp. nov.* 5 figures.

Frond probably large, tripinnatifid (quadripinnatifid?); foliage pecopteroid; rachis smooth, occasionally minutely punctate; primary pinnae unknown; "secondary" pinnae alternate, oblique, departing at an angle of 60 degrees. Pinnules ovate, alternate, close, short and robust; apex obtuse, rounded. Pinnules thin, nervation distinct. Veins fork at a wide angle and traverse the lamina in a flexuous

EXPLANATION OF THE ILLUSTRATION

OLIGOCARPIA VERA *Darrah.* Counterparts of the type specimen. The small sori, which are incrusted with calcite, are borne upon typical pecopteroid foliage. Natural size. Carboniferous: Allegheny: Mazon Creek, Illinois. F.O.Thompson Collection.



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path. Sori large, placed at the ends of the veins, on the lower surface of the frond. Sporangia 4 to 6 in number, independent, placed in a ring. Sporangia annulate with the annulus composed of one row of cells. Sporangia 35-45 mm. long, 20 mm. wide. Spores numerous (hundreds), subspherical, smooth, 35–40 μ. in diameter.

Holotype No. 18704 F. O. Thompson Collection in the Botanical Museum of Harvard University.

This new species is clearly referable to the group of *Oligocarpia gutbieri,* but is readily distinguished by having a uniseriate annulus and by having robust pecopteroid foliage.

Oligocarpia vera is distinguished from *O. kansasensis* Sellards[2] by its greater size, its pecopteroid rather than sphenopteroid foliage, its smooth rather than punctate rachis, its absence of "thorns" on the rachis, and in not having the tertiary pinnules overlapping. In *O. kansasensis* the details of the sorus are not known. The Kansas species occurs in the Lawrence Shales, Douglas Formation.

Oligocarpia vera differs from *O. alabamensis* Lesquereux in having well developed terminal pinnules, pecopteroid instead of sphenopteroid foliage, and more flexuous venation. It differs also from *O. missouriensis* D. White[4] in having pecopteroid foliage, much greater size, pinnules which are not crenulate and do not depart at right angles from the rachis of the pinna. In *O. missouriensis* the details of the sori and sporangia are not known.

Oligocarpia flagellaris Lesquereux[5] has sphenopteroid foliage and perhaps should be excluded from this genus. Specimen No. 7596 from Morris, Illinois (Lesquereux's No. P. 294) is a *Sphenopteris* and the fructification is indistinct. *O. vera* bears no relationship to this species.

It now appears to be clear that the foliage of *Oligo-*

carpia is usually of the sphenopteroid type and frequently investigators, in discussing the genus, fail to consider the fact that the foliage may be pecopteroid.

The chief species of the sphenopteroid series is *Oligocarpia brongniarti* Stur[6] and the best known of the pecopteroid series is *O. gutbieri* Goeppert,[7] although even in this species the foliage is more or less sphenopteroid.

In all of the species in which the sporangia are known, there has been observed a more or less transverse annulus which resembles in great detail that found in the genus *Gleichenia*. There is some evidence indicating that, at least in a few species, the sorus is synangial, even though each sporangium is annulate. In all of the species the sorus is circular and consists of 3–6 (10) pyriform sporangia which Zeiller describes as bearing a complete transverse annulus.

Stur[8] believed that the ''annulus'' is merely a type of preservation of the exannulate sporangia. Solms-Laubach[9] agreed with the opinion of Stur and went further in saying, ''I am still obliged to assent to Stur's opinion of the independent existence of the annulus. If we look at the obliquely conical sporangium from above, we get a profile view of one or more transverse rows of the strongly thickened cell-walls, and may mistake them for an annulus; but we find that whenever we alter the position of a detached sporangium, the supposed annulus appears in another place.''

This annulus is not clearly understood. Kidston found that the annulus may be biseriate or triseriate, although earlier work indicated that the annulus was uniseriate. It has been implied that if Kidston's observations prove to be typical for most (if not all) species of *Oligocarpia* then their affinity with the Gleicheniaceae may be challenged. However, it is to be observed that in only a few species of *Oligocarpia* is the sorus known and Kidston's opinion is practically limited to *O.gutbieri.* It does not follow that the case for or against the existence of the Paleozoic Gleicheniaceae rests on this point.

Synangia do occur occasionally in the living genus *Gleichenia.* In other words, the teratological occurrence of a biseriate annulus and a synangial condition of the sorus in *Gleichenia* admit the possibility and propriety of including *Oligocarpia* in the Gleicheniaceae.

The sorus of *Oligocarpia* may be compared with several types of fructifications attributed to marattiaceous ferns. A case in point is *Asterotheca* notably *Asterotheca miltoni (Artis). Asterotheca* belongs to the Carboniferous eusporangiate complex which can be referred to the Marattiaceae or to a closely allied family. This similarity may indicate phylogenetical relationship. Bower has suggested that the type of sorus in *Gleichenia* is essentially like that of the Marattiaceae—that is, derived from it.

Thus there are two relationships of the sorus which are in doubt. If Kidston is correct in regarding the sorus to be an annulate synangium, then we observe a type of fructification which, as far as I am aware, is not normally found in any existing ferns. On the other hand, if there are species of the genus which have a uniseriate annulus and in which the sporangia are free, then there is no reason for excluding *Oligocarpia* from the Gleicheniaceae.

The Gleicheniaceae are a decadent group which represent but a small remnant of a former diverse stock. It is to be expected that the earlier members of the group fail to conform to the narrow limits of the residual stock which has lost much of its plasticity.

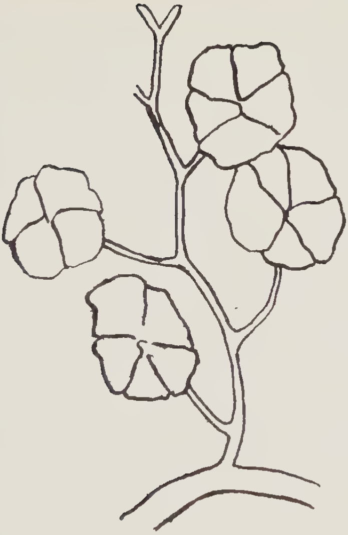
Nevertheless among the comparatively few existing members of the family we encounter several remarkable characters of variability. The sori of the Gleicheniaceae are superficial and are borne in a single row on both sides of the midrib. The number of sporangia in a sorus varies

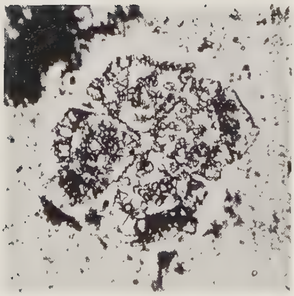
EXPLANATION OF THE ILLUSTRATION

Oligocarpia vera *Darrah.* The figure at top shows how the sporangia are borne at the ends of secondary veins. Drawn ten times natural size. The lamina is not indicated. The figure in middle is redrawn from Stur. It shows a sorus composed of four sporangia. Twenty times natural size.

Both drawings executed by G. W. Dillon

The figure at bottom is a photograph of a nitrocellulose peel made from the type specimen. It shows four annulate sporangia filled with the subspherical spores. Fifteen times natural size.





from 2 to 6 in most of the species, but in a few the number may be 10 or even 12. There is considerable variation on a single fertile segment. There is no indusium and the sorus is naked. Bower[10] remarks that in the extreme cases of the gleicheniaceous sorus, with a large number of sporangia some of which are displaced by pressure, we find a condition which suggests the sori of both the Marattiaceae and the Cyatheaceae. In the former, the typical sorus is a single row of sporangia which surrounds a low receptacle. In the latter, the receptacle is elongated and its apex is covered with sporangia. In the eusporangiate Marattiaceae the spore-output is generally very large and in the higher ferns the spore-output is usually smaller. In the comprehensive genus *Gleichenia* it has been observed that the spore-output varies from 128 to 1024 and the number 256 is most frequent. *Stromatopteris*, on the basis of several spore counts, has a potential output of 512. *Platyzoma* is particularly important in this connection, because it exhibits a condition which is considered as incipient heterospory. The sporangia are of two sizes, the smaller of which are more abundant. The number of spores varies from 16 downward in the larger sporangia, and from 32 downward in the smaller sporangia (Bower). There are intergrades between the extremes.

This heterogeneous complex probably represents several relict lines of descent from a more extensive group, and the morphology of the spore-bearing members makes this suggestion more probable.

It is advisable to append to this dicussion a few additional observations, though they are included only for the sake of completeness.

Oligocarpia brongniarti Stur was believed by Zeiller[11] to have a uniseriate annulus, but recently De Pape and Carpentier[12] have figured a specimen which indicates that the annulus of the sporangium may be biseriate.

Some years ago Stopes[13] recognized that Dawson's *Sphenopteris splendens*[14] was identical with *Oligocarpia brongniarti* Stur[15] and that Dawson's specific name held priority. Consequently, the species was renamed *Oligocarpia splendens.* Kidston, however, rejected this new name and retained the name given by Stur, because the figures published by Dawson are of no value. This is the usual procedure adopted by paleobotanists. The New Brunswick plant, then, is known as *O. brongniarti.*

Most of the species of *Oligocarpia* are of upper Carboniferous age. The rocks of the Pennsylvanian formations of northern Illinois have yielded three species in addition to *O. vera.* A fourth, *Oligocarpia flagellaris* Lesquereux, is to be excluded from this genus; it is better known as *Sphenopteris flagellaris* Lesquereux. The reference of this species to the form-genus *Sphenopteris* restores to validity the original name used by Lesquereux in the *Journal of the Boston Society of Natural History* in 1854 (volume 6, page 420) and in the *Geology of Pennsylvania* in 1858 (page 862). In the *Coal Flora* (page 267), Lesquereux remarked that the habitat is "South Salem Vein, Tunnel of Sharp Mountain, near Pottsville" [Pennsylvania] and "no other specimens have been found than the one figured." This statement was erroneous, for according to Lesquereux's manuscript catalogue, he had referred specimens from Illinois, West Virginia, and western Pennsylvania to this species.

Lesquereux reported a specimen of *Oligocarpia alabamensis* from Morris, Illinois, but this record is in error. David White[16] suggested that it should have been renamed and that the specimen belonged rather to *O. missouriensis.* I have seen no specimen from Illinois referable to either *O. alabamensis* or *O. missouriensis.* Tentatively, I record the occurrence of the latter species from Illinois on the strength of White's remarks.

Lesquereux also recorded *Oligocarpia cf. gutbieri* from Mazon Creek. White was doubtful of the accuracy of Lesquereux's determination, but I do not share this doubt. I have seen six specimens referable to this species all from Braidwood and Mazon Creek. My concept of *O. gutbieri* is based entirely upon the descriptions published in western Europe, although I have relied chiefly upon the opinions of Stur and Kidston.

In summarizing, it is observed that only two undoubted species of *Oligocarpia* occur in the Mazon Creek flora of Illinois: *O. gutbieri* Goeppert, and *O. vera* Darrah which is described in this paper. It is possible that *O. missouriensis* D. White also occurs in this region, but the record is questionable. The record of *O. alabamensis* Lesquereux is erroneous.

Oligocarpia vera is one of the pecopteroid species of *Oligocarpia* and is remarkable for its uniseriate annulus. The evidence regarding the systematic position of the genus is here reviewed and it is concluded that it belongs properly to the existing family Gleicheniaceae.

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Castilla elastica. The following year (1794), the text of Cervantes' lecture was published[4] in a Suplemento á la Gazeta de Literatura de Mexico, together with a figure of *Castilla elastica.* The generic name was chosen to commemorate Juan Diego del Castillo (1744-1793), a Spanish pharmacist and economic botanist, whose death occurred while he was compiling a flora of Mexico.

In 1805, with a view to rendering more accessible various botanical articles which had appeared in obscure journals, Charles Koenig[6] of the British Museum published translations of nine rare or little known contributions. Among these was Cervantes' article. In the translation, however, the generic name was altered to *Castilloa.*

Although Koenig gave no reason for the change, the extra vowel was in all probability introduced in order to make the name grammatically correct, and was not the result, as Pittier states, of a typographical error, "a slip of the pen or the officious but ignorant interference of the translator."

Whatever the reason for the change, the name *Castilloa* became firmly established in literature, and its use was continued unquestioned for nearly a hundred years.

In 1903, however, O. F. Cook[5] (in his memoir on the Central American Rubber Tree) pointed out that the use of *Castilloa* for the genus could be "justified by no recognized rule of botanical nomenclature." Pittier[7], who monographed the genus in 1910, concurred in this opinion. Certainly there have been no recent changes in the laws of priority or other rules of nomenclature that would make the use of *Castilloa* any more permissible at the present time.

In America at least, *Castilla* is quite generally considered to be the name which must be taken up for this genus, even though *Castilloa* may be grammatically correct. As evidence of this, recent publications of such authorities as Bailey[1], Britton and Wilson[2], Record and Mell[8], and Standley[10,11,12,13] may be cited. There is evidence also that taxonomists in other parts of the world are reverting to the older name. Burkill[3], for example, uses *Castilla* and comments briefly on the "mischance" which was responsible for the adoption of *Castilloa.*

Although over thirty years have elapsed since Cook pointed out that *Castilla* was the correct name for the rubber trees of Central America and Mexico, it is not at all surprising that most of the literature on economic botany continues to use the more familiar *Castilloa.* It is strange, however, that the competent taxonomists in England and on the continent continue to condone the use of a name that is contrary to the established rules of botanical nomenclature.

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ORCHID STUDIES, V

BY

LOUIS O. WILLIAMS

THROUGH THE KINDNESS of Dr. William R. Maxon, Curator of the United States National Herbarium, the orchids collected by Joseph F. Rock in Yunnan Province, China, and adjacent Burma in 1922-1923 have been made available for study. The collection contains 157 numbers of orchids, many of which are of unusual interest. In addition to the two species described below, there are several others which possibly will prove to be new when more critical studies and comparisons can be made.

In addition to the collection of Chinese orchids mentioned above, an interesting Philippine species of Taeniophyllum (which belongs to the genus segregated by Dr. Rudolf Schlechter as Geissanthera) has made the study of several allied species necessary. This species and its allies are discussed, and an additional Philippine species of Taeniophyllum (subgenus Eutaeniophyllum) is described.

Orchis constricta *L. O. Williams sp. nov.*

Herba parva, terrestris, 4–8 cm. vel ultra alta. Folia duo, basalaria, late elliptica, acuta vel acuminata, basi leviter petiolata. Bracteae inflorescentiae lineari-lanceolatae, acutae. Inflorescentia uniflora. Sepalum dorsale rhombico-lanceolatum, obtusum, leviter naviculare, trinervium. Sepala lateralia late lanceolata, obtusa, falcata, obliqua, trinervia. Petala lineari-lanceolata, obtusa vel acuta, binervia. Labellum trilobatum; lobi laterales basi labelli, lineari-lanceolati, acuti; lobus medius rhombicus, obscure crenulatus vel integer; calcar elongatum, curvatum, prope apicem constrictum.

A small terrestrial herb 4–8 cm. or more tall. Tubers probably fusiform, about 1 cm. long. Scape filiform, not greatly exceeding the leaves in length. Leaves two, basal, broadly elliptic, acute or acuminate, tapering into a short petiole at the base, 2–5 cm. long, 0.8–2 cm. broad, probably becoming longer when mature. Inflorescence 1-flowered. Floral bract linear-lanceolate, acute or acuminate, 6–12 mm. long, 1–3 mm. broad. Dorsal sepal rhombic-lanceolate, obtuse, slightly navicular, 3-nerved, about 8 mm. long and 4 mm. broad. Lateral sepals broadly lanceolate, obtuse, falcate and somewhat asymmetrical, 3-nerved, about 8 mm. long and 4 mm. broad. Petals linear-lanceolate, obtuse or acute, 2-nerved, about 6 mm. long and 1.5 mm. broad. Lip 3-lobed: lateral lobes linear-lanceolate, acute, from the base of the lip about 7 mm. long and 1.5 mm. broad; mid-lobe rhombic, obtuse, obscurely crenulate or entire, about 10 mm. long and 6 mm. broad; spur very long and strongly curved toward the apex, probably somewhat flattened laterally, constricted near the apex, enlarged and saccate at the apex, 22–30 mm. long, with its throat 3–5 mm. in diameter, its constriction 1–2.5 mm. in diameter, and its saccate portion about 5 mm. long and 3–4 mm. in diameter.

Orchis constricta is not closely allied to any other species of Orchis known to the author. The following characters serve to distinguish the species: the one-flowered inflorescence, the very long curved spur which is constricted near the apex and the comparatively large size of the flower.

CHINA: Yunnan Province Wua chje, 3 days north of Muli, Yangtze watershed, Prefectural District of Likiang, eastern slope of Likiang Snow Range. In forest, flowers purple. May-October 1922. *Rock 5592* (TYPE in Herb. Ames No. 46474).

Oberonia latipetala *L. O. Williams sp. nov.*

Herba parva, epiphytica, usque ad 12 cm. alta. Folia equitantia, lanceolata, acuta vel acuminata, coriacea. Bracteae inflorescentiae aristatae, basi ovatae. Inflorescentia spicata cum floribus confertis. Sepalum dorsale oblongo-lanceolatum, obtusum, sine nervum, dorso paulo echinatum. Sepala lateralia sepalo dorsali similia. Petala ovalia, obtusa, trinervia, minute ciliata. Labellum simplex, obovatum, infra medium constrictum, basi auriculatum, apiculatum, ciliatum et supra pubescens.

A small epiphytic herb, up to about 12 cm. tall. Roots few, small, glabrous or possibly somewhat pubescent. Leaves equitant, lanceolate, acute or acuminate, coriaceous, 1.5–5 cm. long, 0.3–0.7 cm. broad. Inflorescence spicate, many-flowered, dense. Floral bracts ovate-lanceolate, the upper ones acuminate, the lower ones becoming smaller and long-aristate. Dorsal sepal oblong-lanceolate, obtuse, without nerves, minutely echinate dorsally, about 2 mm. long and 1 mm. broad. Lateral sepals similar to the dorsal sepal. Petals oval, obtuse, 3-nerved, minutely ciliate, 2–2.5 mm. long, 1.5–2 mm. broad. Lip simple, obovate, somewhat constricted below the middle and inconspicuously auriculate at the base, short-apiculate at the apex, 3-nerved with the median nerve often obscure, ciliate, finely pubescent on the upper surface, 1–1.5 mm. long, 0.75–1.25 mm. broad. Column about 0.5 mm. long.

Oberonia latipetala is not closely allied to any species known to occur in China or India. It may be distinguished by the very broad petals, by the sepals which are minutely echinate dorsally and by the simple lip which is slightly auriculate at the base and somewhat constricted below the middle.

China: Yunnan Province, camp at Ya Tau Pa, between Tengyueh and Lungling. Epiphyte, flowers greenish. October 21, 1922. *Rock 7117* (Type in Herb. Ames No. 46475).

TAENIOPHYLLUM *Blume*

Taeniophyllum is one of those perplexing genera of orchids of which the collector usually finds but a few plants. The flowers are delicate and apparently never produced abundantly; hence material finding its way into herbaria is often indeterminable.

In the Philippine Islands the genus is represented by six described species. The author believes that this number might be doubled, for there are specimens in the Ames Herbarium which seem to indicate that there may be an equal number of undescribed species in the Philippines. The material at hand is adequate for the description of two of these species, but it is thought advisable to await more complete material before attempting to identify the others.

The species of *Taeniophyllum* previously known to be natives of the Philippines have all belonged to the subgenera *Eutaeniophyllum* and *Microtatorchis.* Another subgenus is proposed, to which a new Philippine species and two old species are referred.

TAENIOPHYLLUM subg. **Geissanthera** *(Schltr.) L. O. Williams comb. nov.*

Geissanthera Schltr. in Schumann & Lauterbach Nachtr. Fl. Deutsch. Schutzgeb. (1905) 231, t. 12 B—J.J.Sm. Nova Guinea 8 (1909) Orch. 129.

Taeniophyllum (subg. Geissanthera) **papuanum** *(Schltr.) L. O. Williams comb. nov.*

Geissanthera papuana Schltr. in Schumann & Lauterbach Nachtr. Fl. Deutsch. Schutzgeb. (1905) 232.

Taeniophyllum (subg. Geissanthera) **tubulosum** *(J.J.Sm.) L. O. Williams comb. nov.*

Geissanthera tubulosa J.J.Sm. in Bull. Dépt. Agric.

Ind. Néerl. No. 19 (1908) 24—J.J.Sm. Nova Guinea 8 (1909) Orch. 129, t. 44.

Taeniophyllum (subg. Geissanthera) **bracteatum** *L.O. Williams sp. nov.*

Herba parva, epiphytica, usque ad 4 cm. alta. Folia parva, basalaria, oblongo-lanceolata, cum mucrone aristato longo. Pedunculus leviter fractiflexus, cum bracteis a basi usque ad apicem. Bracteae basi cum stipularum aristatarum paribus, foliis similes. Sepala lanceolata, acuta. Petala sepalis similia sed paulo angustiora. Labellum lanceolatum, acutum, basi dilatatum, parte dilatata lobos laterales formanti. Columna subgeneris.

A small acaulescent (or semiacaulescent) epiphytic herb, about 4 cm. tall. Roots apparently somewhat flattened, those seen not longer than the stem and inflorescence. Leaves basal, small, lanceolate, with a long aristate mucro, 10 mm. or less long, about 2 mm. broad, the mucro 1–2 mm. long. Peduncle slightly fractiflex, strongly bracteate to the base. Bracts oblong-lanceolate, mucronate, about 3–9 mm. long; with a pair of aristate, basal, stipule-like processes. Sepals lanceolate, acute, about 3 mm. long and 0.75 mm. broad. Petals similar to the sepals but slightly narrower. Lip lanceolate, acute, about 3 mm. long, dilated toward the base, the dilated portion forming the lateral lobes which are normally erect or infolded. Spur scrotiform, about 1–1.5 mm. long.

Taeniophyllum bracteatum is most closely allied to *T. papuanum* from which it may be easily distinguished as follows:

T. bracteatum	*T. papuanum*
Perianth parts about 3 mm. long.	Perianth parts about 6 mm. long.
Sepals and petals acute.	Sepals and petals acuminate.
Lip subsimple, merely broadened at the base.	Lip not simple, with two lateral teeth.

PHILIPPINE ISLANDS: Negros, Canlaon Volcano. April 1910. *Merrill 7010* (TYPE in Herb. Ames No. 11839).

Taeniophyllum (subg. Eutaeniophyllum) **saccatum** *L. O. Williams sp. nov.*

Herba parva, epiphytica, acaulescens. Pedunculus filiformis, papillifer. Bracteae inflorescentiae lanceolatae. Sepalum dorsale lineari-lanceolatum, acutum, uninervium, leviter carinatum. Sepala lateralia acuta vel obtusa. Petala lanceolata, acuta, uninervia. Labellum lanceolatum, prope apicem cum callo donatum, basi saccata; lobi laterales rotundi.

A small epiphytic acaulescent herb. Roots flattened, strongly 1-nerved, 2–3 mm. broad, mostly less than 10 cm. long. Peduncle filiform, papilliferous, fractiflex, commonly less than 7 mm. long. Bracts of the inflorescence lanceolate, usually about 2 mm. apart, about 1 mm. long. Perianth parts ocellate with crystalline inclusions, more or less fleshy, the sepals and petals adnate at the base for a short distance. Dorsal sepal linear-lanceolate, acute, 1-nerved, about 3 mm. long and 0.75 mm. broad. Lateral sepals lanceolate, acute or obtuse, 3–3.5 mm. long and 0.75–1 mm. broad. Petals lanceolate, acute, 1-nerved, about 2.5 mm. long and 1 mm. broad. Lip 3-lobed, broadly lanceolate, about 3.5 mm. long, with a thickening or callus near the apex; lateral lobes inconspicuous, rounded, not separated from the mid-lobe by a sinus; at the base of the lip there is a large saccate spur which is strongly constricted at the neck, is directed forward, and is about 3.5 mm. long and 1.5 mm. in diameter. Column short, with a pair of oblong-ovate stelidia; rostellum bifid.

Taeniophyllum saccatum is most easily distinguished from all of the other known Philippine species by the much enlarged saccate portion of the spur. The species most closely allied to it seems to be *T. Elmeri*, which is similar in the form of the inflorescence and in facies, but the structure of the lip together with the saccate spur serves to differentiate the two species.

Philippine Islands, Leyte: Jaro, Buenavista. Epiphyte. At 500 meters altitude. March 15, 1914. *Wenzel 352;* Jaro, Masaganap. Epiphyte in forest. At 750 meters altitude. February 11, 1914. *Wenzel 265;* Jaro, Masaganap. Epiphyte in forest. At 600 meters altitude. March 9, 1914. *Wenzel 337;* November 20, 1914. *Wenzel 687;* Jaro, Masaganap. Forest. At 600 meters altitude. November 16, 1914. *Wenzel 669;* Jaro, Masaganap. Epiphyte in forest. At 600 meters altitude. November 22-23, 1914. *Wenzel 711;* Jaro, Masaganap. Forest. At 700 meters altitude. February 19, 1915. *Wenzel 885* (Type in Herb. Ames No. 44135); Jaro, Masaganap. Epiphyte in forest. At 700 meters altitude. March 2, 1915. *Wenzel 895.*

CORALLORRHIZA STRIATA *Lindley,* A MIXTURE

BY

LOUIS O. WILLIAMS

IN STUDYING THE ORIGINAL DESCRIPTION of *Corallorrhiza striata* Lindley (Gen. & Sp. Orch. Pl. (1840) 534), it was found to disagree with the interpretation generally given the species by American authors. *C. striata* was described as having a trilobulate lip, a character which is unknown in *C. striata* as commonly understood.

Lindley's type specimen is a mixture of *C. striata,* as that species is usually interpreted, with another species of Corallorrhiza, very probably *C. maculata* Raf. Fortunately there is a good photograph of the type specimen in the Ames Herbarium. This photograph of the Lindley type shows parts of three plants collected by Douglas in "N. W. America" and a sketch (by Lindley) of a flower and lip. Only the left hand inflorescence is referable to *C. striata* in its present accepted sense, and is the only material having striate flowers. Consequently this material should be accepted as the true type of Lindley's *C. striata,* in spite of the discrepancies written into the original description.

A probable duplicate of the Douglas collection, on which Lindley's species is based, is to be found in the Gray Herbarium: it is *C. striata* of traditional usage.

If we consider the technical characters of Lindley's description, the sketch of the flower which he made and the fact that most of the material upon which he based the species is probably *C. maculata,* one might feel justified in reducing it to synonymy under *C. maculata.* There are, however, several considerations which argue for the retention of the name *C. striata* in the traditional usage:

1. The name *striata* must have been taken from that

part of the type which had striate perianth parts, hence the name would not apply well to *C. maculata.*

2. The name is well established in botanical literature and there has been little or no confusion in its application.

3. The type sheet bears a specimen of *C. striata* and the description applies to that specimen, in major part.

4. To take up another name for the plant would cause confusion and serve no useful purpose.

It is suggested, therefore, that the use of the name *C. striata* Lindl. be continued in the traditional sense. Toward this end it is proposed that the specimen on the left side of Lindley's type sheet be considered as the type and that the other specimens and the sketch on the sheet be disregarded in the typification of the species.